

WHAT IS CLAIMED IS:

- 1 1. A laser-processing machine comprising:
 - 2 a measuring cell into which gas to be analyzed can flow;
 - 3 a means for decoupling diagnostic radiation from laser radiation provided for material
 - 4 processing of a workpiece; and
 - 5 a sound detector for detecting a photo-acoustical effect due to absorption of the
 - 6 diagnostic radiation by gas in the cell.
- 1 2. The laser-processing machine of claim 1, wherein the laser radiation is CO₂ laser
- 2 radiation.
- 1 3. The laser-processing machine of claim 1, wherein the means for decoupling the
- 2 diagnostic radiation from the laser radiation includes a means for diffracting laser
- 3 radiation used for power measurement.
- 1 4. The laser-processing machine of claim 1, wherein the means for decoupling the
- 2 diagnostic radiation from the laser radiation includes a means for reflecting laser
- 3 radiation used for power measurement.
- 1 5. The laser-processing machine of claim 1, wherein the means for decoupling the
- 2 diagnostic radiation from the laser radiation includes a partially-transparent mirror for
- 3 reflecting laser radiation used for power measurement.
- 1 6. The laser-processing machine of claim 5, wherein the partially-transparent mirror is a rear
- 2 mirror of the radiation source.
- 1 7. The laser-processing machine of claim 1, further comprising a mechanical means for
- 2 generating a pulsed diagnostic radiation.
- 1 8. The laser-processing machine of claim 1, further comprising an electronic means for
- 2 generating a pulsed diagnostic radiation.

